Kwansei Gakuin University
Humanities Review
Vol.20, 2015
Nishinomiya, Japan

Improving Academic Writing through Thinking Routines

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Abstract

In a knowledge-based society, the ability to think critically is vital. Those who can do so are better prepared to participate in society as decision makers and knowledge creators. In this paper, critical thinking is approached through Ennis' (1998, p. 16) definition of critical thinking as "thinking that is reasonable and reflective, and is focused on deciding what to believe or do." In order to develop this kind of thinking in students, an academic writing program consisting of two classes and two writing assignments was designed to encourage thinking dispositions (Ritchhart & Perkins, 2000). Thinking dispositions consist of the sensitivity to opportunities to think, and the inclination and ability to do so. Thinking routines were used to encourage the development of thinking dispositions. These routines are tools, structures, and patterns of behavior that model the thinking process (Ritchhart, Church & Morrison, 2011). Ninety-four undergraduates (n=94) at a four-year Japanese university participated in a study to determine whether the use of thinking routines could increase the number of students who would support their claims in academic writing with evidence. The participants took a pre-test and a post-test that consisted of two short reading passages and one essay question item. Essays were coded as having no support for their claims, supporting their claims with opinions, or supporting their claims with evidence. The academic writing program mentioned above was administered between the pre- and post-tests. Results show that the academic writing program, which utilized thinking routines, may have increased the number of participants who were able to support their claims with evidence. Therefore, it is possible that thinking routines may improve students' academic writing.

Keywords: critical thinking; academic writing; thinking routines; thinking dispositions; EFL

In the 21st century, information on any subject imaginable is available at the click of a mouse, so being able to memorize and recall information is not as important as it used to be. Being able to use information to solve problems and make decisions is more highly valued (Zwiers & Crawford, 2011). This calls for a shift towards emphasizing critical thinking in education. Critical thinking can be applied to real world language use in students' personal lives and in whatever discipline that they choose to follow (Brookhart, 2010). In fact, many employers claim that among the most valuable skills that they are looking for in prospective employees is the ability to think critically and independently (Taylor, 2010). To address this change in educational needs, recent standards in the United States, such as the Common Core, have emphasized the role of critical thinking in education through the promotion of academic reading, writing, and speaking (Key Shifts in English Language Arts, 2015).

However, some have raised the question whether it is appropriate for critical thinking to be included in L2 classroom instruction. Among the arguments are that critical thinking does not exist in non-western contexts, or that students from non-western cultures have little experience with critical thinking and that it is unfair to ask them to practice it (Atkinson, 1997; Ramanathan & Kaplan, 1996). These concerns have been put to rest by research that has shown that critical thinking skills can be taught to and are often possessed by many L2 English learners from non-western backgrounds (Kubota, 1999; Stapleton, 2001; Davidson & Dunham, 1997; Sasaki & Hirose, 1996). With this in mind, educators teaching English as an L2 have the responsibility to prepare their students to use English in the knowledge-based society that they will be entering on graduation. In order to do this, students must be able to think critically not only in their L1, but also in their L2. Students who cannot do this will be at a great disadvantage in the global marketplace (Liaw, 2007; Davidson, 1998).

Literature Review

Critical Thinking

What is critical thinking? It is a widely used term with a wide variety of definitions. This paper will use Ennis' (1998, p. 16) definition of critical thinking as "thinking that is reasonable and reflective, and is focused on deciding what to believe or do". Being reasonable means that thoughts are based on evidence, and if thoughts are shared with others, they are stated clearly and logically in a way that others can understand. By being reflective, critical thinkers are flexible and are open to change. New knowledge is compared with older knowledge, connections between the two are made, and discrepancies are scrutinized. Through this process thoughts can be refined, confirmed or changed. Finally, critical thinking is

purpose-driven, whether that purpose is internal or external. In addition, Ennis (1998) advocates that critical thinking can be done in groups as well as by individuals.

In order to get a practical understanding of what critical thinking is, it is helpful to examine how different disciplines use it (Ritchhart, Church & Morrison, 2011). For example, scientists use critical thinking to question the world around them. In other words, they ask questions to decide what to believe about the world, which makes their thinking purpose-driven. They then make careful observations on the subjects of those questions, and gather evidence for reasoning and reflection. Then they form answers to those questions based on the evidence they have collected. This is thinking that is reasonable, reflective, and focused on decision-making. While science may not be the topic of many EFL courses, educators can encourage students to identify questions, make observations, and form answers using the observations they have made. This is an example of critical thinking that can be applied to a wide variety of topics and situations.

Introducing Critical Thinking: Challenges

Introducing critical thinking into the L2 classroom faces a few challenges. The first of these challenges comes from how the brain works. Human brains are not wired to think, but to remember, recognize patterns, and to make predictions based on those memories and patterns. In short, our brains are wired to be efficient and to avoid mistakes (Willingham, 2009). Some propose that the human brain operates on a dual system (Hattie & Yates, 2014). This dual system consists of a fast-operating system, System 1 (S1), which is used when we respond automatically, and a slow-operating system, System 2 (S2), which is used when we consciously think. When possible, human brains default to S1 since it is quicker and more efficient. S1 relies on our memories, particularly our memories of social situations, and makes predictions on likely outcomes. Based on these predictions, S1 causes individuals to act in a way that it predicts will most likely lead to success. However, when S1 cannot deal with a situation, then S2 is activated. Students depend on S1 as much as possible in the classroom. However, engaging in critical thinking requires conscious thought—the use of S2. Teachers must help their students make this shift.

One challenge that can make the shift from S1 to S2 challenging for students is a lack of exposure to critical thinking in previous educational experiences (Hattie & Yates, 2014). This is particularly true if students have only taken courses that rely on traditional, memory-centered approaches of learning. Students in these courses are usually not asked to think deeply about what they are learning. While they may achieve a high-degree of success on tests, these

students may feel frustrated when they encounter S2 processing in the classroom, and those who are high-achievers in traditional settings may feel particularly uncomfortable since they are unaccustomed to this sense of frustration (Fried, 2005). Therefore, it is important that teachers introduce critical thinking into their classrooms gradually when they teach students with such a background.

Some L2 teachers may feel that their students are not ready to participate in critical thinking and that they should focus on grammar and vocabulary instead. This may come from the misconception of thinking as a linear process. For example, in Bloom's revised taxonomy, understanding is ranked as a lower-order thinking skill whereas creating is ranked as a higher-order thinking skill (Anderson & Krathwohl, 2001). However, in ranking thinking skills in this way, it gives the impression that understanding should be achieved before asking students to try higher-order thinking skills (Ritchhart, Church & Morrison, 2011). However, thinking is actually a much more integrated process, and different thinking skills can be applied in different orders and in conjunction with each other. For example, a child may learn in a lecture that blue and yellow make green and then create a painting with this knowledge, or by creating a painting she may come to understand that blue and yellow make green. In other words, the order of thinking skills is flexible. What this means for L2 education is that an understanding of grammar and vocabulary can be achieved as a result of the thinking process. In this sense, understanding is no longer a lower form of thinking that must be achieved before moving on to more rigorous thinking activities. Instead, it becomes a goal that can be achieved through thinking (Wiske, 1997). This will give meaning and purpose to the basics that students learn, which may lead to a higher rate of retention (Hattie & Yates, 2014; Ritchhart, Church & Morrison, 2011).

Thinking Dispositions

Considering the challenges above, how can teachers approach critical thinking in the classroom? In order to encourage students to become reasonable, reflective, and purpose-driven thinkers, a focus on skills and abilities is not sufficient. The ability to use thinking skills, while necessary, is of little use if those skills are not used (Tishman, 2000). Critical thinking instruction that focuses only on ability may lead to classes where students produce examples of thinking on demand, but show no initiative to think on their own (Perkins, et al., 2000). Therefore, rather than encourage students to do critical thinking, educators should encouraging them to become critical thinkers. To clarify this distinction, when we describe someone as a critical thinker we may say that they are "open-minded, reasonable, thoughtful, skeptical, curious, and so on" (Tishman &

Palmer, 2005, p. 3). These are not descriptions of ability, but of "dispositional tendencies."

Ritchhart and Perkins (2000, p. 30) define "a disposition as a psychological element consisting of three components: sensitivity, inclination, and ability." When applied to thinking, sensitivity involves recognizing or noticing opportunities to apply a thinking skill; inclination involves the motivation to use that thinking skill, which can come from personal motivation or simply being in the habit of doing it; and ability involves actually performing the skill. Perhaps the most important of these is sensitivity, because if students do not notice opportunities for thinking, it will not happen regardless of their inclination or ability (Tishman, 2000). Additionally, developing a high level of sensitivity will help students become highly autonomous learners.

While there are many thinking dispositions that can be identified, this research project focused on the six thinking dispositions identified by Tishman and Palmer (2007): 1) reasoning, 2) exploring viewpoints, 3) finding complexity, 4) comparing and connecting, 5) questioning and investigating, and 6) observing and describing. These thinking dispositions are flexible in how they are used. For example, questioning and investigating may lead to reasoning, which in turn may lead to comparing and connecting. In other words, a thinking dispositions approach advocates the concept that thinking is not a linear or hierarchal process, but rather an integrated process.

Thinking Routines

The development of thinking dispositions can be a powerful step towards becoming reasonable, reflective, and purpose-driven thinkers, but how can they be encouraged in the classroom? Vygotsky (1978, p. 88) points out that students "grow into the intellectual life of those around them." This emphasizes that learning is social, so in order to encourage thinking in students, educators should create a "culture of thinking" (Ritchhart, Church & Morrison, 2011, p. 219). This involves providing models of thinking, making thinking visual, and providing regular opportunities to think.

By serving as a model thinker, teachers can become guides to the process of thinking. By thinking through issues out loud for students, they will develop an awareness of the thinking process (Hattie & Yates, 2014). Without proper models, students will rely on their S1 for guiding their approach to thinking, which will prove to be inadequate if students have little experience with thinking. However, mechanical models that merely show process are not sufficient for creating a culture of thinking. Students require a social model of how to engage with a topic. This includes not only showing a passion for the topic, but also expressing an

authentic interest in developing ideas (Ritchhart, Church & Morrison, 2011). Teachers can also model how they notice opportunities for thinking, how they question their own ideas, and how to look at ideas from different viewpoints. These kinds of models may provide rich social learning experiences for students to emulate.

Another way to help students develop thinking dispositions is to make thinking visible. Thinking is usually an invisible process that occurs in the mind. However, if this process is highlighted in some visible way, then it raises students' awareness of the thinking process, which in turn allows them to become more autonomous as they are able to make conscious decisions about their thinking. In addition, when thinking is visible, students get the message that thinking is a key part of the educational process (Tishman & Palmer, 2005).

One way in which thinking can be made visible is through the use of thinking routines. Thinking routines are tools, structures, and patterns of behavior that model the thinking process (Ritchhart, Church & Morrison, 2011). They can help draw students' attention to common patterns of thinking. This will help students develop sensitivity to opportunities for thinking. Also, these structures can be utilized repeatedly, and through repetition they can be easily internalized by students. This is beneficial because dispositions are formed in the same way as habits, through repeated practice of certain behaviors (Tishman & Palmer, 2007). By developing the habit of using thinking routines, students will improve their inclination to think.

Another benefit of thinking routines is that they do not rely on memorization. They are designed not to uncover specific answers, but to uncover the thinking process itself. Students will discover that, "learning is not about absorbing others' ideas, but involves uncovering one's own ideas as the starting point for learning" (Ritchhart, Church & Morrison, 2011, p. 49). When using thinking routines, it is important to keep in mind that thinking is an integrated process, so any specific routine should not be presented as the only way to think. Rather, the aim is to help students to develop thinking dispositions, which will enable them to apply their thinking skills flexibly and independently to any task (Barahal, 2008).

Research Question

The aim of this study was to determine if thinking routines could help improve students' academic writing ability. The aspect of academic writing explored was the ability to support arguments with evidence. Being able to support arguments is a key part of being a critical thinker. The theory proposed is that students who use thinking routines will become more aware of the

importance of supporting claims with evidence, and this awareness will lead to a greater number of participants doing so in their academic writing work.

RQ Will the number of participants engaging in academic writing who support their arguments with evidence increase after using thinking routines in class?

Method

Participants and Procedures

Ninety-four second-year students (n=94) at a Japanese university participated in this study. All participants were enrolled in a compulsory four-skill English course and were studying English as a foreign language. The course was a 14-week course, and participants attended the course once a week.

A short essay test consisting of two short reading passages and one essay item (see Appendix) was administered to the participants both before and after the treatment (week 1 and week 14). The reading passages were excerpts from primary historical documents. Primary documents were used because "history is not what happened, but what we say happened" (Loewen, 2010). This makes it easy to find documents with opposing viewpoints on a topic that students may know about. This provides opportunities for considering different viewpoints, making connections with prior knowledge, and questioning previously held beliefs, which are thinking dispositions that can encourage critical thinking. Since the course the participants were enrolled was a mixed-level course, the contents of the reading may have been challenging for some participants, so they were allowed to use their dictionaries during the pre- and post-tests in order to reduce the effect of differences in vocabulary knowledge.

In order to reduce the effect of prior knowledge on the results of this study, the same readings and test item were used for the pre-test and the post-test. Students were not likely to achieve a better result on one of the tests due to the inclusion of more familiar content. In order to avoid making the post-test question a matter of simple recall (Brookhart, 2010), the content of the pre- and post-test were not covered during the course. Additionally, the pre-tests were not returned to the participants and no feedback was given, so there were no opportunities for the participants to review the content for the post-test. This again was to prevent participants from preparing answers outside of class and merely remembering the answers during the post-test.

Only participants who took both the pre- and post-test were included in this study. In order to code the data, participant essays were divided into three groups: essays in which no support was given for the argument, essays in which

arguments were supported by opinions, and essays in which arguments were supported with evidence. Essays that were coded as not giving support were coded for one of the following reasons: 1) the essay only contained a claim; 2) the essay summarized the main points of both articles, but did not take a position; 3) the essay gave evidence that did not support the claim or countered the claim; and 4) the essay did not address the essay question given. Essays that were coded as supported by opinion were coded for one of the following reasons: 1) the essay restated a sentence from the article and added a phrase of agreement (ex. "I think so too."); 2) the essay restated the claim as evidence (ex. "I think it is important for women to have the right to work, because working is important to women."); 3) the essay supported it's claim with personal opinion (ex. "I don't think it's fair for women to stay at home with the children."). Essays that were coded as supported with evidence were coded such for one of the following reasons: 1) the claim was supported with a reason; 2) the claim was supported with a personal experience; 3) the claim was supported with an example; 4) the claim was supported with a quotation from one of the articles with an explanation of how the quotation supports its claim.

Treatment

The treatment for this study consisted of two writing classes, which occurred during week 3 and week 12 of the course. In designing the tasks for these writing courses, careful attention was given to ensuring that they encouraged critical thinking. Students were encouraged to be reasonable by highlighting the importance of providing evidence for claims. They were encouraged to be reflective by providing opportunities to compare new knowledge to prior knowledge. Also, tasks were purpose-driven in that multiple points of view were presented on the topics covered, so students had to decide what to believe in. In order to achieve this, two thinking routines were used in the writing classes: See-Think-Wonder, and Generate-Sort-Connect-Elaborate (Ritchhart, Church & Morrison, 2011).

The thinking routine See-Think-Wonder is made up of three questions to guide thinking. *What do you see? What do you think about that? What do you wonder about?* These three questions support the following thinking dispositions: observing and describing, reasoning, and questioning and investigating. At the beginning of the class, the participants were presented with a photograph that matched the theme of the lesson. In pairs, students used the photograph to answer the three questions. The aim of this routine was to get students to think deeply about the topic before it was introduced by the teacher. By making careful observations, students were able to collect information that might connect with their prior knowledge and could be used to support their interpretations of the

photo, and by questioning the photo, students could keep their minds open to new ideas that might lie outside of their experiences and observations (Ryder, 2010). This provided a sense of agency for students as they were able to come to an understanding of the themes of the lessons on their own, and they could also ask questions that they discovered were important to understanding the content of the class.

The second thinking routine used in the writing classes was Generate-Sort-Connect-Elaborate. This routine makes students' thinking visible through the use of a concept map. This routine supports the following thinking dispositions: exploring viewpoints, reasoning, comparing and connecting, and finding complexity. To prepare for this routine, each student read a historical primary document before class, took notes on which sentences in the reading they felt were the most important and what they felt the sentences meant. Students were assigned different documents which presented differing viewpoints on the topic of the class. This intellectual conflict served to drive student interest in the topic, and provided an excellent opportunity to explore different viewpoints (Johnson & Johnson, 2009). In class, students started by generating a list of their prior knowledge and beliefs on the topic of the lesson. Then working with a partner, they sorted their ideas by evaluating how relevant they felt those ideas were to the topic. Next, students shared their notes on the documents they read for homework, and then found connections between their notes on the documents they read and the list of ideas that they made at the beginning of class. Finally, students identified the most interesting connections on their concept maps and elaborated on those ideas by adding further thoughts, comments, and questions. After each writing class was completed, participants took their concept maps home and used them as the basis for writing a short essay. These essays were graded and feedback on how well claims were supported was provided.

Results

The results of the pre-test (see Table 1.) showed that many participants support their claims with opinions, with 43.62% of them doing so. This result is not surprising as Japanese essay writing generally puts emphasis on opinion (McKinley, 2013). Since students in Japan have more experience with opinion-based essay writing, it was expected that they would rely on these past experiences (Casanave, 2003). Additionally, a large percentage of participants provided no support for their claims at 22.34%. This showed a lack of awareness that claims need to be supported by evidence. The pre-test shows that a minority of students were able to provide adequate support for their claims.

The post-test results showed very different results. 63.83% of participants were able to support their claims with evidence, which was a large increase from the 34.04% who were able to do so in their pre-test essays. Additionally, only 7.45% of participants provided no support for their claims. These results show an overall improvement in academic writing ability. This can also be taken as an improvement in L2 critical thinking ability, since supporting ideas with evidence is a key principle of the definition of critical thinking.

Table 1. Support for Claims

n = 94

	Number of Participants		
	Provided No Support for Claim	Supported Claim with an Opinion	Supported Claim with Evidence
Pre-test	21	41	32
Post-test	7	27	60

Another area that participants showed improvement is in the use of quotations to support their ideas (see Table 2.). The use of quotations is not an integral part of critical thinking or thinking dispositions, so it was not a focus of this study. However, it is a common feature of academic writing, so it is worth examining. The percentage of students who used quotations successfully rose from 6.38% of participants to 27.66%. While more students developed sensitivity to the use of text sources as a form of evidence, a majority of participants did not take advantage of the sources in this way.

Table 2. Use of Quotations to Support Claims

n = 94

	Number of Participants	
	No Quotation Used	Quotation Used
Pre-test	88	6
Post-test	68	26

Discussion

The results of this study showed a strong improvement in participants' academic writing skills. On the post-test, a majority of participants were sensitive to the opportunity to reason by noticing that they needed to provide evidence for their claims. They had the inclination to do so, either through conscious choice or through habit. Finally, they had the ability to do it as demonstrated in their essays.

These results are promising, and show that the use of thinking routines may be an effective approach for developing thinking dispositions. With this evidence of sensitivity, inclination, and ability, it could be said that the majority of participants in this study were able to develop the disposition for reasoning, which is one of the key thinking dispositions proposed by Tishman and Palmer (2007). Since being a reasonable thinker is a part of Ennis' (1998) definition of critical thinking, it could also be said that those participants were also demonstrating critical thinking.

Also, this demonstration of critical thinking through reasoning by Japanese students provides further support for the studies by Kubota (1999), Stapleton (2001), Davidson & Dunham (1997), and Sasaki and Hirose (1996) that demonstrated that critical thinking can be achieved by L2 learners from non-western backgrounds. Even in the pre-test, 34.04% of participants were able to support their claims with evidence, so there seems to be evidence that some students have had experience with critical thinking in previous educational experiences. Perhaps students in the Japanese English education system are getting more exposure to critical thinking than L2 teachers assume. Regardless, students can develop the dispositions necessary to engage in critical thinking if they are provided the opportunity to do so. If L2 students find academic writing difficult, it is helpful to keep in mind that even L1 speakers can struggle with it when first encountering it at university, so it should come as no surprise that L2 students would have a similar experience (Hyland, 2002).

Thinking routines proved to have another benefit. Since it makes the students' thinking visible, it became much easier to give meaningful feedback to the students. When thinking is visible, teachers can see the reasons behind students' ideas and how they created them (Tishman & Palmer, 2005). This makes it is easier to see how to help students. Also, especially for L2 students, it is easier for students to understand the feedback they are given when their thinking is made visible. Feedback from the teacher can also be a strong motivator for students (Hattie & Yates, 2014). When giving positive praise, teachers should not only give it, but should also say why they think the students' contributions deserve special attention. Students may feel that the praise is more sincere, and it also serves as a model for how to communicate at a deeper level, which can help create a culture of thinking. This may lead to more authentic interaction between teachers and students.

One of the pleasant surprises of this study was how participants engaged with the historical primary documents in the writing classes. Despite the difficulty of the readings, students seemed motivated to explore them, and the majority of students were able to demonstrate an understanding of the readings through their

essays. Perhaps this was because the readings presented the topics from different viewpoints, which helped create an environment in which it was safe for students to disagree with each other, the source material, and even the teacher. Disagreement can be positive and can drive students to construct their own thoughts (Sam & Dawes, 2004). When students are responsible for constructing their own knowledge, it leads to a higher rate of retention, and the ability to disagree with others can be very liberating for those whose primary educational experiences were formed in institutions where consensus is considered the ideal. Additionally, since the documents provided differing viewpoints, it created a positive sense of ambiguity, which provided real choices and opportunities to apply thinking skills.

Conclusion

Language teachers have to remember that students may not be interested in the language itself, but in what they can do with the language. While students, in time, may forget the vocabulary, grammar, expressions, and other details that they are taught, they will maintain the thinking dispositions that they develop. Therefore, it is vital that teachers keep their minds on these dispositions when planning their lessons (Barahal, 2008). In other words, focus not on acquiring knowledge, but on creating knowledge.

By developing the sensitivity, inclination, and ability to think, students will be better prepared to become creators of knowledge rather than merely consumers of it (Zwiers & Crawford, 2011). By becoming knowledge creators, students will be better prepared to participate in the knowledge-based economy, which they will be entering on graduation. This is particularly important for English language students in Japan, who will be competing with English speakers from all over the world. With little experience with academic reading, writing, and speaking, they may find that they are unprepared to use the language they have studied (Hammond, 2013). By providing students with these experiences, teachers can help ensure that their students will be ready to use their language skills outside of the classroom.

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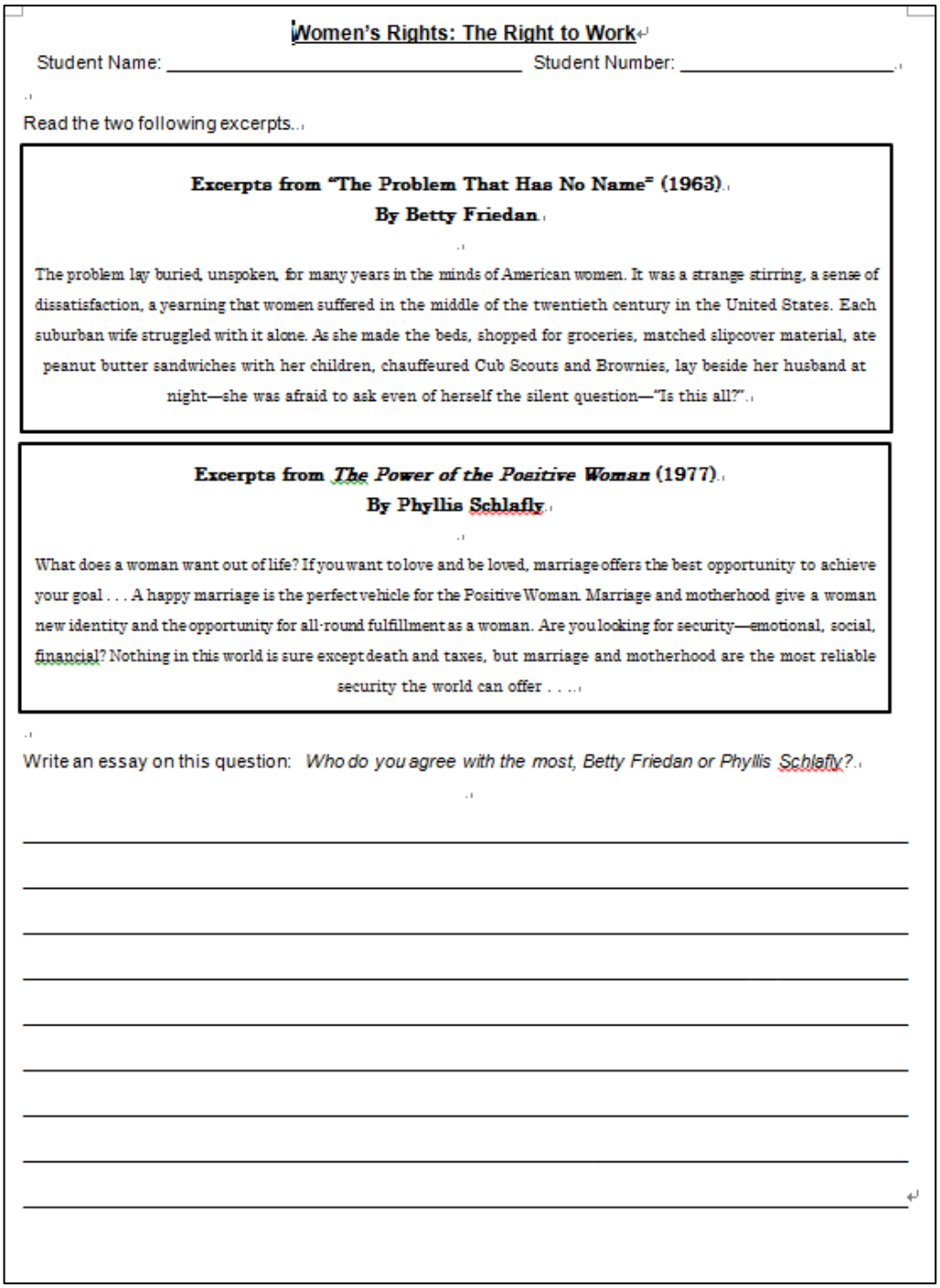
Appendix

Pre-test/Post-test Item



Women's Rights: The Right to Work

Student Name: _____ Student Number: _____

Read the two following excerpts...

Excerpts from "The Problem That Has No Name" (1963)
By Betty Friedan

The problem lay buried, unspoken, for many years in the minds of American women. It was a strange stirring, a sense of dissatisfaction, a yearning that women suffered in the middle of the twentieth century in the United States. Each suburban wife struggled with it alone. As she made the beds, shopped for groceries, matched slipcover material, ate peanut butter sandwiches with her children, chauffeured Cub Scouts and Brownies, lay beside her husband at night—she was afraid to ask even of herself the silent question—"Is this all?"

Excerpts from *The Power of the Positive Woman* (1977)
By Phyllis Schlafly

What does a woman want out of life? If you want to love and be loved, marriage offers the best opportunity to achieve your goal . . . A happy marriage is the perfect vehicle for the Positive Woman. Marriage and motherhood give a woman new identity and the opportunity for all-round fulfillment as a woman. Are you looking for security—emotional, social, financial? Nothing in this world is sure except death and taxes, but marriage and motherhood are the most reliable security the world can offer . . .

Write an essay on this question: *Who do you agree with the most, Betty Friedan or Phyllis Schlafly?*